

# PATENT SPECIFICATION



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## COMPLETE SPECIFICATION.

### Process for the Production of Ammonium Carnallite or Potassium Carnallite.

We, **KALI - FORSCHUNGS - ANSTALT, G.m.b.H.**, a Company organised under the Laws of Germany, of Schönebergerstrasse 5, Berlin, S.W.II, Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 A process is known which relates to the production of magnesium chloride, free of water, from ammonium carnallite and to the recovery of this starting material by absorbing the vapours evolved by the heating of the double salt in magnesium chloride solution or end-liquor which yield, on cooling, crystallised ammonium carnallite.

20 A further process relates to the production of magnesium chloride free of water in an admixture with KCl suitable for electrolysis, and of the potassium carnallite or ammonium carnallite used for this purpose, by decomposing potassium chloride or ammonium chloride respectively by stirring with concentrated magnesium chloride solutions, for example, the end-liquors of the potassium industry.

30 The further utilisation of the mother liquor obtained in both processes after the separation of the ammonium carnallite has not been discussed, but it must, however, be taken into consideration in view of the high prices of ammonium salts. It is possible to expel the ammonia with lime by heating and to discard the liquors thus obtained or to evaporate down the mother liquors and, after adding magnesium chloride solutions and ammonium chloride, to re-utilise same.

35 The present process, however, relates to a method by means of which these mother liquors may be utilised over and over again without the expenditure of heat for evaporation.

40 They are either stirred together with the melt of magnesium chloride-hexahydrate and ammonium chloride, yielding ammonium carnallite by crystallisation upon cooling, or decomposed with commercial crystallised magnesium chloride and ammonium chloride in order to

form ammonium carnallite.

Both products, the melt of the hexahydrate as well as the crystallised salt, can easily be recovered from the end liquors of the potassium industry and thus lead in the most economical manner to the ammonium carnallite which serves as the starting material for the recovery of magnesium chloride free of water.

In the same way potassium chloride and magnesium chloride hexahydrate may be added, either in the molten or in the crystalline state, to potassium carnallite or ammonium carnallite mother liquors for the purpose of recovering potassium carnallite.

A mixture of both salts may be obtained in an analogous manner.

#### EXAMPLES.

1. To 1 kg. of the mother liquor obtained at 25°, according to the first-mentioned known process, which contains 87 gr. of ammonium chloride and 210 gr. of magnesium chloride, were added 200 gr. of molten magnesium chloride-hexahydrate (125°) and 53 gr. of ammonium chloride whilst stirring. Upon cooling down to 25° there were obtained, after complete removal of the adherent mother liquor, 255 gr. ammonium carnallite.

2. 200 gr. of crystallised magnesium chloride-hexahydrate and 53 gr. of ammonium chloride were added to 1 kg. of the mother liquor obtained at 25° according to the first-mentioned known process, and stirred for an hour. There were obtained, after the removal of the mother liquor, 248 gr. ammonium carnallite.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Process for the production of ammonium carnallite or potassium carnallite or mixture of both, characterised by the fact that mother liquors from their production are stirred together with molten or crystallised magnesium chloride-hexahydrate and ammonium chloride or potassium chloride respectively and

that the mother liquors thus obtained are herein described.  
employed over and over again without  
previous evaporation.

2. The improved process for the pro-  
duction of ammonium carnallite or  
potassium carnallite substantially as

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